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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,433	12/27/2001	David Harel	72829	1725

22242 7590 11/18/2004

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EXAMINER	
NAHAR, QAMRUN	

ART UNIT	PAPER NUMBER
2124	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/034,433	HAREL ET AL.	
	Examiner	Art Unit	
	Qamrun Nahar	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 December 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/29/02, 7/1/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-51 have been examined.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because figures 25A-E are overlapping in one page. Therefore, each of figures 25A-E should be submitted in separate pages. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page

header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code, for example, on page 4, line 27. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Objections

5. Claim 10 is objected to because of the following informalities: "specification at least one" on line 2 of the claim should be "specification **being** at least one". Appropriate correction is required.

6. Claim 20 is objected to because of the following informalities: "(iii)" and "(iv)" on line 2 and line 5 of the claim should be "(i)" and "(ii)", respectively. Appropriate correction is required.

Claims 21 and 51 refer to "(iii)" on line 1 of the claims, which should be changed to "(i)".

7. Claim 48 is objected to because of the following informalities: "The apparatus according to Claim 30" on line 1 of the claim should be "The apparatus according to Claim **39**". Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 15-16, 27, 33, 34 and 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 15 recites the limitation "said step (c)" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as "said step (iii)".

Claim 16 is rejected for dependency upon rejected base claim 15 above.

11. Claim 27 recites the limitation "said testing" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as "testing".

12. Claim 33 recites the limitation "the existential charts" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as "existential charts".

13. Claim 34 recites the limitation "said LSC" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as "said Live sequence chart".

14. Claim 41 recites the limitation "said playing-in" in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim. Therefore, this limitation is interpreted as "said playing-out".

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

16. Claims 1-9, 12, 14-16, 18-21, 24, 26, 28, 30-33 and 35-51 are rejected under 35 U.S.C. 102(e) as being anticipated by Sherman (U.S. 6,205,575).

Per Claim 1:

The Sherman patent discloses:

- **a method for specifying a system behavior, comprising: (i) providing a system Graphic User Interface (GUI)** (Col.14:20 – 30);

- **the system GUI includes objects** (Col.14:1 – 10);

- **the system GUI is associated with data structure describing at least the GUI objects** (Col.14: 25 – 30, see describe system);

- **the method includes performing steps that include the following steps (ii) and (iii), as many times as required** (Col. 6: 33 – 35, see repeated iteration)**: (ii) playing-in a scenario utilizing the system GUI, the scenario is representative of at least one use case** (Col.5:17 – 27);

- **and (iii) constructing formal system behavior specification that corresponds to the scenario** (Col.6:38 – 45).

Per Claim 2:

The Sherman patent discloses:

- wherein said step (ii) further includes: operating at least one of said objects in the system GUI (Col.4: 27 – 30, see animation).

Per Claim 3:

The Sherman patent discloses:

- wherein said step further includes: (i) specifying user action by operating at least one of said objects (Col.6: 27 – 30)**; (ii) specifying environment action by operating at least one of said objects** (Col.6: 27 – 30)**; and (iii) specifying system reaction by operating at least one of said objects** (Col.6: 27 – 30, see perform actual simulation).

Per Claim 4:

The Sherman patent discloses:

- wherein said objects include at least one internal object and wherein said step further includes operating at least one internal object (Col.15: 12 – 18).

Per Claim 5:

The Sherman patent discloses:

- wherein said objects include at least one internal object and wherein said step further includes operating at least one internal object (Col.15: 12 – 18).

Per Claim 6:

The Sherman patent discloses:

- further comprising the step of: defining at least one control construct and wherein said step (iii) includes constructing formal system behavior specification that corresponds to the control construct (Col.6:25 – 30, system control and defined).

Per Claim 7:

The Sherman patent discloses:

- wherein said control construct step includes creating generalization and loops selected from the group that includes dynamic loops, unbound loops and fixed loops (Col. 6: 33 – 35, see repeated iteration).

Per Claim 8:

The Sherman patent discloses:

- wherein said step (iii) includes constructing symbolic messages (Col.13:58 – 67).

Per Claim 9:

The Sherman patent discloses:

- further comprising the step of: reflecting in the system GUI the result of the played-in scenario (Col.6:51 – 56).

Per Claim 12:

The Sherman patent discloses:

- wherein said formal system behavior specification being at least one Symbolic timing diagram (Col.8: 46, see MSC, Message Sequence Diagrams, which is also known as Timed Sequence Diagrams or Event traced Diagrams Col.13: 59 - 60).

Per Claim 14:

The Sherman patent discloses:

- further comprising, performing the following step as many times as required: (iv) playing-out a scenario utilizing the system GUI and the system behavior specification (Col.5:17 – 27 and Col.14:25 – 28).

Per Claim 15 (as best understood):

The Sherman patent discloses:

- further comprising the step of: defining at least one condition that may or must hold regarding the system (Col.17:47 – 53,see occur); **and wherein said step (iii) includes constructing formal system behavior specification that corresponds to the at least one condition** (Col.14:25 – 30,see occur).

Per Claim 16 (as best understood):

The Sherman patent discloses:

- wherein at least one of said conditions includes defining condition regarding one or more of the operated objects (Col.17: 47 – 53, see voice animation and annotation).

Per Claim 18:

The Sherman patent discloses:

- further comprising the step of: reflecting in the system GUI the result of the operation of at least one of said objects (Col.6:51 – 56).

Per Claim 19:

This is an apparatus version of the claimed method discussed above, claim 1, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claims 20 & 26:

These are another versions of the claimed method discussed above (claims 1 and 14), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Sherman.

Per Claim 21:

This is another version of the claimed method discussed above, claim 18, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 24:

This is another version of the claimed method discussed above, claim 12, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman

Per Claim 28:

The Sherman patent discloses:

- **further comprising the step of recording at least one played out scenario, constituting a run** (Col.14:25 – 28).

Per Claim 30:

The Sherman patent discloses:

- further including the step of: indicating if the system behavior specification or portion thereof is successful or violated (Col.15:3 – 12).

Per Claim 31:

The Sherman patent discloses:

- further including the step of providing a run that includes either or both of user and environment part and system reaction part, constituting a played scenario, and re-playing the run (Col.14:25 – 28).

Per Claim 32:

The Sherman patent discloses:

- wherein said system behavior specification includes existential charts and universal charts, and wherein said universal charts include user action part, environment action part and system reaction part, and further comprising the step of, tracing either or both of said existential and universal charts, and indicating if a chart is successful or violated (Col.13:58 – 67 and Col.15:3 – 12).

Per Claim 33 (as best understood):

The Sherman patent discloses:

- further comprising the step of providing either or both of the user action part and environment action part of said run, replaying the run and indicating if existential charts are successful or violated (Col.13:58 – 67 and Col.15:3 – 12).

Per Claim 35:

This is another version of the claimed method discussed above, claim 4, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman

Per Claim 36:

The Sherman patent discloses:

- wherein said system GUI includes an object map and further comprising the step of: reflecting in the object map the result of the playing-out (Col.14:47 – 66).

Per Claim 37:

The Sherman patent discloses:

- wherein said system GUI includes an object map and further comprising the step of: reflecting in the object map the result of the playing-in (Col.14:47 – 66).

Per Claim 38:

The Sherman patent discloses:

- **wherein said system GUI includes an object map and further comprising the step of: reflecting in the object map the result of the playing-in** (Col.14:47 – 66).

Per Claim 39:

This is an apparatus version of the claimed method discussed above (claims 1 and 14), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 40:

The Sherman patent discloses:

- **wherein said playing-out is used to construct a prototype** (Col.15:27 – 31).

Per Claim 41 (as best understood):

This is an apparatus version of the claimed method discussed above, claim 40, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 42:

This is another version of the claimed method discussed above, claim 40, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 43:

The Sherman patent discloses:

- **wherein said playing-out is used to construct a tutorial** (Col.16:51 – 67).

Per Claim 44:

This is an apparatus version of the claimed method discussed above, claim 43, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 45:

This is another version of the claimed method discussed above, claim 43, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 46:

The Sherman patent discloses:

- wherein said playing-out is used to construct a final implementation of a system (Col.15:27 – 31).

Per Claim 47:

This is another version of the claimed method discussed above, claim 46, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 48:

This is an apparatus version of the claimed method discussed above, claim 46, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 49:

This is a computer program product version of the claimed method discussed above, claim 1, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 50:

This is a computer program product version of the claimed method discussed above, claim 20, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also anticipated by Sherman.

Per Claim 51:

The Sherman patent discloses:

- **wherein said step (i) includes animating interaction between GUI objects** (Col.4: 27 – 30, see animation).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. Claims 10, 17, 22, 29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman (U.S. 6,205,575) in view of Werner Damm and David Harel, LSC's: BREATHING LIFE INTO MESSAGE CHARTS, (c) April 1998, (hereinafter "Werner").

Per Claim 10:

The rejection of claim 1 is incorporated, and further, Sherman does not explicitly teach wherein said formal system behavior specification being at least one Live sequence chart (LSC). Werner teaches that formal system behavior specification being at least one Live sequence chart (LSC) (see Abstract).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by Sherman to include that formal system behavior specification being at least one Live sequence chart (LSC) using the teaching of Werner. The modification would be obvious because one of ordinary skill in the art would be motivated to distinguish between possible and necessary behavior both globally and locally.

Per Claim 17:

The rejection of claim 10 is incorporated, and Sherman further teaches the step of: selectively modifying at least one of said charts (Col.4:10 – 14).

Per Claim 22:

This is another version of the claimed method discussed above, claim 10, wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, this claim is also obvious.

Per Claim 29:

The rejection of claim 22 is incorporated, and Sherman further teaches wherein said system behavior specification includes existential charts and universal charts, and wherein said universal charts include user action part and system reaction part (Col.13:58 – 67).

Per Claim 34 (as best understood):

The rejection of claim 22 is incorporated, and Werner further teaches wherein said Live sequence chart charts include at least two live copies of the same chart simultaneously (pg. 5, see Figure 1, "Illustrating visible events").

19. Claims 11, 13, 23, 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherman (U.S. 6,205,575) in view of Ladkin et al. An Analysis of Message Sequence Charts, (c) June 1992, (hereinafter "Ladkin").

Per Claim 11:

The rejection of claim 1 is incorporated, and further, Sherman does not explicitly teach wherein said formal system behavior specification being Temporal logic language. Ladkin teaches that formal system behavior specification being Temporal logic language (page 3, 3rd paragraph).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by Sherman to include that formal system behavior specification being Temporal logic language using the teaching of Ladkin. The

modification would be obvious because one of ordinary skill in the art would be motivated to provide explicit safety and liveness conditions for MSC's or time sequence charts.

Per Claim 13:

The rejection of claim 1 is incorporated, and further, Sherman does not explicitly teach wherein said formal system behavior specification being at least one Timed Buchi Automata. Ladkin teaches that formal system behavior specification being at least one Timed Buchi Automata (page 3, 3rd paragraph).

It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the method disclosed by Sherman to include that formal system behavior specification being at least one Timed Buchi Automata using the teaching of Ladkin. The modification would be obvious because one of ordinary skill in the art would be motivated to provide MSCs in a more expressive manner.

Per Claims 23 & 25:

These are another versions of the claimed method discussed above (claims 11 and 13, respectively), wherein all claim limitations also have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also obvious.

Per Claim 27 (as best understood):

The rejection of claim 25 is incorporated, and Sherman further teaches wherein testing includes running scenarios and forbidden scenarios (Col.14:55 – 66).

Conclusion

20. Any inquiry concerning this communication from the examiner should be directed to Qamrun Nahar whose telephone number is (571) 272-3730. The examiner can normally be reached on Mondays through Thursdays from 8:30 AM to 6:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki, can be reached on (571) 272-3719. The fax phone number for the organization where this application or processing is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QN
November 15, 2004

KAKALI CHAKI
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TECHNOLOGY CENTER 2100